IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Lawrence H. Sawyer et al. Art Unit 3761
Serial No. 10/699,193
Filed October 31, 2003
Confirmation No. 3474
For STRETCHABLE ABSORBENT ARTICLE
Examiner Melanie J. Hand

August 30, 2006

DECLARATION UNDER 37 C.F.R. §1.131

We, Davis-Dang Hoang Nhan, Mark M. Mleziva, Lawrence H. Sawyer, and Peiguang Zhou declare as follows:

1. We are the joint inventors of the subject matter claimed in the above-entitled United States patent application, Serial Number 10/699,163.

2. At the time of filing application Serial Number 10/699,163, we were employed by Kimberly-Clark Worldwide, Inc. and have assigned all rights to the application to Kimberly-Clark Worldwide, Inc.

3. We are submitting this Declaration to establish conception of the invention of the subject matter of claim 1 in the United States prior to April 4, 2003, coupled with diligence from prior to such date to the filing date of the '163 application.

4. Exhibit A, attached hereto, provides facts and evidence in support of this Declaration. Exhibit A is an invention disclosure form disclosing the subject matter of the present application. Invention disclosures are prepared by

inventor/employees of Kimberly-Clark Worldwide, Inc. in the regular course of business. While all dates identified in the disclosure of Exhibit A have been blocked out, each said date is prior to April 4, 2003.

5. We worked with outside counsel in the preparation of the '163 application and received a draft of the application on or about August 19, 2003. We continued to work with outside counsel to finalize the application for filing on October 31, 2003.

6. We were not aware of U.S. publication No. US 2004/0127614 prior to the filing of the '163 application.

7. We further declare that all statements made herein are of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Davis-Dang Hoang Nhan

August 30, 2006
Date

Mark M. Mleziva

8/31/06

Date

Lawrence H. Sawyer

Lawrence H. Sawyer

August 30, 2006

Date

KCC 4984
K-C 18,956

Peiguang Zhou

Aug. 30, 2006
Date

Invention Disclosure

Submitter:
Answer all parts of this form. Two corroborators must understand the invention. Photocopy the completed form in duplex format, making sure that each odd-numbered page is backed by an even-numbered page with the signature block. The submitter(s) and both corroborators **must sign and date** the reverse side of the duplexed form in **blue** ink, as well as **every** additional sheet submitted with it. Use given name with middle initial. The last part of this form is recommended when additional sheets are required. If your group has a patent facilitator, preview the original with him or her. Send the signed, duplexed form to Kimberly-Clark Corporation, Patent Department, Neenah, WI.

Disclosure No. 18956

Department

Recommended Attorney

For Legal Department use only

PAR Number:

Name of Affiliate/Subsidiary/Licensee, if applicable:

Key Words

Absorbent, hot melt adhesive, deformable, superabsorbent, cellulose fibers, stretchable

1. Title

A Composite of Superabsorbent Material/Polymeric Compound/Substrate for making a stretchable absorbent article

2. Description *(Sign and date each page. Attach pertinent drawings, photographs, block diagrams, flow charts, etc.)*

a. Summary *(Should disclose invention in general, nontechnical terms)*

Disclosed is a stretchable absorbent composite, when made into a stretchable absorbent article, delivers fit, comfort, body conformance, thinness, and "underwear like" to the consumers.

Fit, comfort, body conformance and "underwear-like" are important attributes to the wearers of any disposable absorbent articles. Conventional absorbent articles such as diapers, training pants or adult incontinent products are far from being considered as "underwear-like" products due to thick and bulky absorbent cores. In order to achieve "underwear-like", an absorbent article has to be thin and stretchable in all directions to conform to the body of the wearer without changing SAM distribution in the absorbent core to maintain leakage performance.

In a conventional absorbent core, SAM particles & cellulose fibers are loosely mixed together to form an absorbent batt. If such absorbent batt is put in between a stretchable outer cover and a stretchable liner to make a stretchable absorbent article, SAM particles & cellulose fibers will shift around as the article is stretched & un-stretched during usage. This loss of SAM particles & cellulose fibers in the target area will lead to early leakage. Furthermore, accumulation of SAM particles in certain areas in the absorbent core can cause uneven swelling, which can make the wearers feel uncomfortable.

In this invention disclosure, we describe an absorbent core structure in which the SAM particles "move" with the stretchable outer cover/liner, but they are not allowed to freely shift around, when the absorbent core is going through stretched/un-stretched cycles during usage. The absorbent core structure described here is constructed by using a polymeric compound (such as a hot melt adhesive) to hold SAM particles in place during processing and to securely retain SAM during product usage. In addition, cellulose fibers are not required.

b. Detailed description, including specific embodiments and applicable alternatives, ranges and products, and process/apparatus variations.

The absorbent core structure described above consists of immobilizing SAM in between the outer cover and liner by spraying a polymeric compound. The key is to make SAM particles not only stick to themselves, but they also stick to the substrates. The polymeric compound here has a low storage modulus (G') that allows the composite of SAM/ polymeric compound /substrates to stretch during product usage without loss of integrity. The polymeric compound can be, but is not limited to, any typical construction or elastic attachment adhesives that are known to the art. The described absorbent

core structure has many advantages over coform absorbent materials (US 4,100,324, US 4,724,114 and 6,417,120) that contain polymers as binder fibers (such as polypropylene, styrenic block copolymer) as shown below:

1) low viscosity polymeric compounds such as hot melt adhesives are much cheaper than elastomeric polymers

2) low viscosity polymeric compounds such as hot melt adhesives are processed much more easily than pure polymer: lower processing temperature (250-360°F) and lower capital cost (conventional hot melt adhesive melter versus extruder).

3) low viscosity polymeric compounds such as hot melt adhesives have a much better capability to capture and to securely retain SAM particles to outer cover and liner because of their tack and low viscosity, easier to wet SAM particles and substrate (lower G'). It requires less add-on (gsm) to capture a given amount of SAM as compared to polymers.

The described absorbent core structure was first hand-made in the laboratory using a commercial available construction adhesive (National Starch 34-5610) and commercial available SAM (SXM 9543). The adhesive was first sprayed (melt-blown like) on a stretchable spunbond (SPRINGO, 1.0 osy, sheet-core structure fibers) using a Pam gun. Then a layer of the SAM was applied on top. The process was repeated a couple times to achieve multiple layers of the SAM between two stretchable spunbond layers. The SAM add-on was about 500 gsm and the adhesive add-on was about 50 gsm.

After the made composite was elongated by 100%, it was observed that it had about 80% recovery upon relaxation. One can further improve the recovery of the composite by using substrates that have a better elasticity property.

After the made composite was stretched and relaxed multiple times, there was no measurable amount of SAM fall-out

After soaking the made composite in a saline solution, there was no indication that the adhesive inhibited the SAM particles from swelling, and it was also observed that the saline saturated composite of SAM/adhesive /substrates could be stretched without compromising integrity.

Additional potential embodiments:

1. The said polymeric compound has a long open time (0.5 second or longer). Open time is calculated by taking the distance (from a melt-blown head to a nip rolls) divides by the web speed. Long open time is important for processing when nip rolls can not be located close to the adhesive applicators. Long open time allows the polymeric compound to flow and deform around SAM particles and substrate when the composite goes through a nip roll. This ensures that SAM particles are well anchored in place before the product is used.

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Submitter	Lawrence H. Sawyer	Child Care Research/2NC Dept./Location
Manager	Laurie Couture	Child Care Research/2NC Dept./Location

The foregoing signed disclosure was read and understood by me on the date hereinafter set forth.

Corroborator	Lindsay C. Shelby	Child Care Research/2NC Dept./Location
Corroborator	Robert A. Lundgaard	E S / WRE Dept./Location

2. The said polymeric compound has a low storage modulus (less than 2.0×10^6 dyne/cm^2 at 25°C). This allows the adhesive in a SAM/polymeric compound /substrate to easily deform as the substrate stretches. Furthermore, low storage modulus means that the SAM/adhesive/substrate composite will be soft and flexible. These are desirable attributes.
3. The said polymeric compound has low viscosity (less than 10,000 cp). Low viscosity means lower processing temperature and better wet-out (more intimate contact between the said polymeric compound and the SAM particles and substrate). It also means that the melt blown fibers are laid down thinner (because it is easier to draw). Therefore, less amount of a polymeric compound is needed per given amount of SAM because of more surface coverage of the melt blown polymeric compound.
4. The said polymeric compound can be sprayed using a melt-blown head (such as MB200 and CC-200 Controlled Coat by Nordson) to form a random laid fibrous mesh of polymer. It can also be sprayed using a swirl spray head (such as CF-200 Controlled Fiberization by Nordson) with high air pressure to form a random laid fibrous mesh of polymer. It can also be sprayed using the new spray head technology (such as the UFD head (Uniform Fiber Deposition) by ITW Dynatec) with high air pressure to form a random laid fibrous mesh of polymer.
5. Perforated tissue can be incorporated into the said SAM/polymeric composite/stretchable substrate composite for wicking & intake rate enhancement
6. Cellulose fibers can be incorporated into the said SAM/polymeric composite/stretchable substrates composite for improved intake rate
7. Facings could be embossed, thermal, ultrasonic bonded together to further improve integrity
8. Facing could be tissue-based or tissue/polymer (such as HYDROKNIT material) to enhance wicking & intake rate.

c. How does the invention distinguish from what has been done in the past and what advantages are obtained? Identify related work done by others *(patents, journal articles, etc.)*. Identify other related disclosures of which you may have knowledge, or other work within Kimberly-Clark Corporation within the same area.

3. I (We) first conceived the above idea on

4. I (We) first disclosed the above idea to others on

5. The persons to whom the above idea was first disclosed are: Laurie Couture.

8. The first sample/embodiment illustrating the above idea was made on and is now located in Lab Notebook P-8788. Its identification number is

9. The above idea was first actually tried on . Describe how and when it was tried, including a complete description and date of the first time the idea was tried and, if the first attempt was unsuccessful, the first time it was successfully tried.

Composites were successfully made on as described above.

10. Has consumer or public use testing of this idea been carried out? No If "Yes," when? Describe testing:

11. Is consumer or public use testing planned for the future? No If "Yes," when? Describe testing:

12. Has the idea been used in, or to produce, a product or a service that was sold or offered for sale? No If "Yes," when? How used:

13. Has the idea been disclosed outside Kimberly-Clark Corporation? No If "Yes," when? . To whom:

Describe details surrounding all disclosures.

Was the idea disclosed under Confidential Disclosure Agreement? If "Yes," attach a copy of the agreement.

14. Is commercial or public use imminent? No If "Yes," indicate the anticipated earliest date of commercial or public use.

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Submitter	Lawrence H. Sawyer	Child Care Research/2NC	Dept./Location
Manager	Laurie Couture	Child Care Research/2NC	Dept./Location

The foregoing signed disclosure was read and understood by me on the date hereinafter set forth.

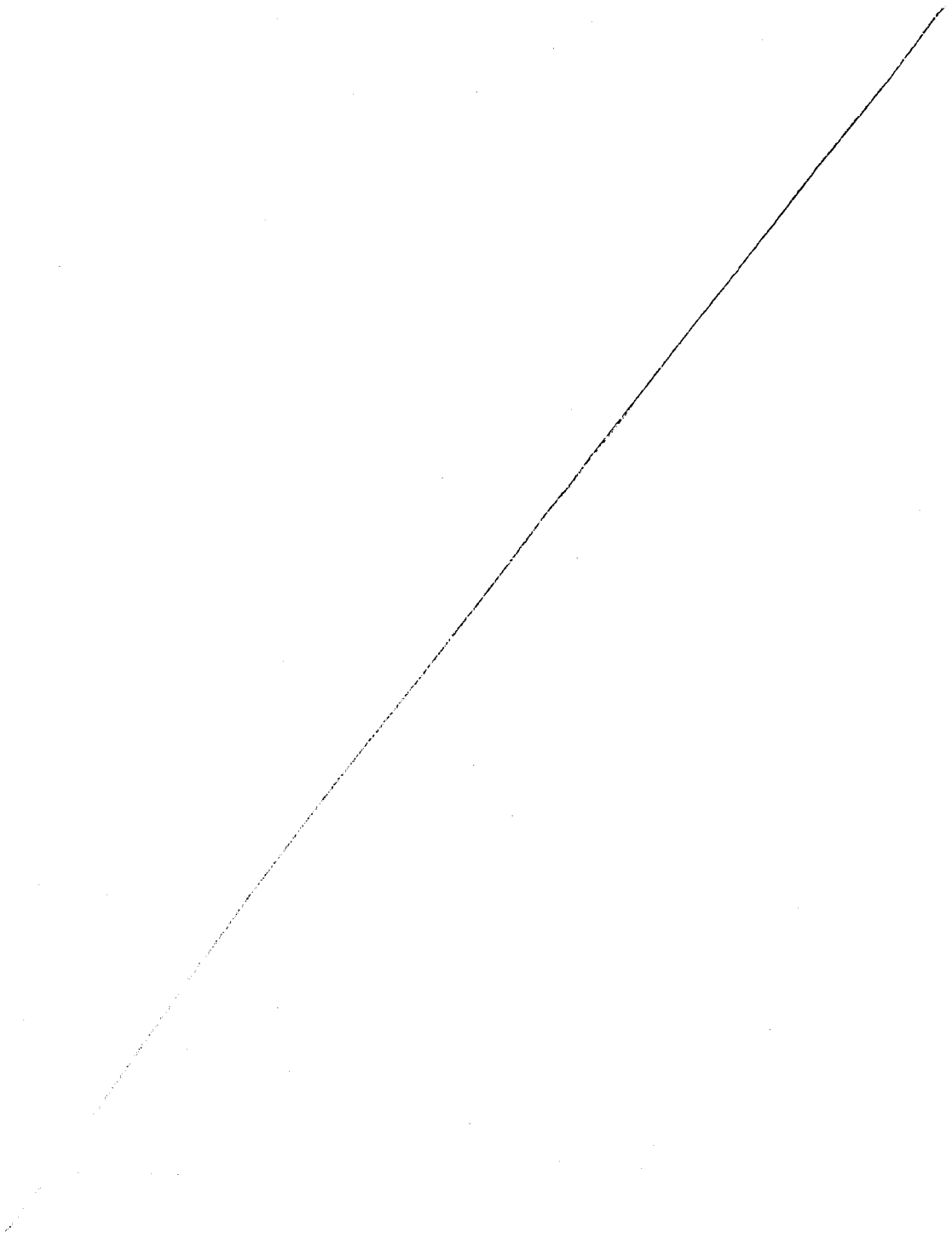
Corroborator	Lindsay C. Shelley	Child Care Research/2K	Dept./Location
Corroborator	Robert C. Dunkhase	ES/WR4	Dept./Location

Invention Disclosure

Title

15. List the names of everyone who has contributed to this idea. *(Those listed cannot be corroborators. A submitter should provide a copy of the completed disclosure to each listed K-C employee.)*

Davis Dang H. Nhan, Peiguang Zhou, Mark M. Mleziva and Lawrence H. Sawyer



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The foregoing signed disclosure was read and understood by me on the date hereinafter set forth.

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Corroborator	[illegible]	ES/WRE	Dept./Location